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PRINCIPAL INVESTIGATOR: Laura Mae Baldwin, M.D.

CONTRACTING ORGANIZATION: University of Washington
Seattle, Washington 98105-6613

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13. ABSTRACT (Maximum 200 Words) Breast conserving therapy with radiation (BCT) is underutilized in the treatment of stage I and II breast cancer. This project examines the degree to which distance to radiation therapy and the training and practice style of surgeons contribute to this underuse of BCT in elderly women, especially those living in rural areas. A comprehensive database linking information from the Seattle-Puget Sound Surveillance, Epidemiology, and End Results Program, Medicare part B claims, the American Medical Association Masterfile, and the American Board of Medical Specialties has been created for the study analyses. We will define cohorts of women based on 1) their distance from radiation therapy services, 2) their surgeons' characteristics, such as board certification status, gender, and time in practice, and 3) their consultation with medical and radiation oncologists prior to surgery. We will examine rates of use of BCT in these cohorts while controlling for patient characteristics such as age, co-morbidity, race, and marital status. The results of this study will be used to identify potentially modifiable causes for underuse of BCT and to determine whether interventions to increase availability of BCT should focus on physician education, public education, or improving access to radiation therapy services.			
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FOREWORD

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Introduction

Breast conserving surgery with radiation (BCT) is clearly underutilized in the treatment of stage I and II breast cancer (1,2). A number of studies have demonstrated that BCT offers equivalent survival rates to mastectomy for women with stage I and II breast cancer regardless of age (3-10). In 1990, the National Institutes of Health published a consensus statement recommending BCT for the majority of women with stage I and II breast cancer (11). Yet studies show that there is great variation in the use of BCT, with general underuse of this treatment option (1,2,12). Rural women in particular have very low rates of BCT compared to mastectomy (13). Elderly women with local and regional breast cancer who receive care in rural areas are half as likely to receive BCT as elderly women with the same stage breast cancer who receive care in large metropolitan areas.

This study's goal is to determine the degree to which poor access to radiation therapy services and the training and practice style of their surgeons contribute to this underuse of BCT in treating early stage breast cancer in elderly women, especially those living in rural areas. The results of this study can be used to identify potentially modifiable causes for underuse of BCT and to determine whether interventions to increase availability of BCT should focus on physician education, public education, or improving access to radiation therapy services.

Body

Methods Overview

This study uses a retrospective cohort study design to examine the effect of 1) access to radiation oncology services, 2) surgeon's characteristics, and 3) consultation with oncologists and radiation oncologists prior to surgery on the use of BCT in elderly breast cancer patients in western Washington State. The study population includes women reported to the Seattle-Puget Sound Surveillance, Epidemiology, and End Results (SEER) Program database with an initial diagnosis of stage I or II breast cancer in 1994 and 1995. A comprehensive database linking information from several sources provides information on patient, physician, and hospital characteristics for use in the analyses.

Cohorts of women will be defined based on their distance from radiation therapy services, their surgeons' characteristics, and their consultation with oncologists and radiation oncologists prior to surgery. Rates of use of breast conserving surgery with and without radiation will be examined for these cohorts, controlling for patient characteristics, hospital characteristics, and cancer stage.

Database Linkage

The first priority in this study was to create a unique and comprehensive database linking the 1994 and 1995 Seattle-Puget Sound Surveillance, Epidemiology, and End Results (SEER) database for breast cancer cases with 1993, 1994, and 1995 Medicare part B and enrollment databases, American Board of Medical Specialties data, and the American Medical Association Masterfile database. Much of the first year of the grant was spent on this first task. We identified 416,325 women 65 and older in Washington's 1994 and 1995 Medicare part A, part B, and enrollment files, and sent their Medicare identification numbers (HICs) to the HCFA Region X office so that they could add identifying information. This office was able to link identifiers (name, address, date of birth, and social security number) to 416,313 of these women. These identifiers and HICs were sent to the Cancer Surveillance System office that maintains the Puget Sound SEER database, and similar identifiers in the SEER data were used to link SEER and Medicare data. There were 6,098 breast cancer cases reported to the Puget Sound SEER database in 1994 and 1995, 6,063 of which were in women. Of these 6,063, 2,761 were 65 and older at the time of their diagnosis. Of these, 2,668 (96.6%) were successfully linked with a Medicare HIC number.

Simultaneously, we linked data from the ABMS and AMA Masterfile to describe the physicians caring for these breast cancer patients. These data include year of birth, specialty, year of graduation from medical school, type of medical degree (MD or DO), type of medical practice (solo, group), sex, and board certification status.

Developing Analytic Files

The next steps in the study were to refine the study questions, and develop the variables and analytic databases to answer these questions. We have developed two analytic pathways for this study—one that involves the physician as the unit of analysis, the other that involves the patient as the unit of analysis. Figures 1 and 2 illustrate the analytic models developed for each of these pathways, and identify the variables that we are developing for these analyses.

In order to carry out these analyses, two analytic files are being developed—a physician-based file and a patient-based file. To develop the physician-based file, we used the 1994 and 1995 Medicare part B claims data to identify all surgeons who performed breast conserving surgeries or mastectomies in the study years. We found 363 surgeons in Washington State performing these procedures. We added a series of variables on these physicians from the AMA Masterfile and ABMS data sources—physician age, medical degree (MD/DO), sex, board certification, type of practice (solo/group), year of graduation from medical school. We then identified 2830 women who had had a surgical excision for breast cancer (e.g., breast mass excision, mastectomy) by one of these surgeons. Medicare claims data for these women and these physicians were used to define other variables for the analysis: 1) percent of surgeon's visits that were breast-related, 2) practice location, 3) percent of breast cancer patients with local, regional, or distant disease, 4) percent of breast cancer patients with oncology or radiation oncology consultation in the three months before surgery, 5) average patient travel distance to radiation therapy, 6) average patient travel distance to the surgeon, and 7) percent of patients with BCT with and without radiation (stratified by cancer stage). This file has been completed, with the exception of the average patient travel distance to the surgeon.

The patient-based file is currently under construction. The first step in creating the patient-based file was applying inclusion and exclusion criteria to the linked SEER-Medicare breast cancer cases. Figure 3 demonstrates the development of our study population. Cases that were excluded were males, patients with 2 or more simultaneous breast cancers, patients under the age of 66 (to assure a full year of available claims data for comorbidity definition), and patients with prior breast cancers at any time and other prior cancers within the past 5 years. These exclusions resulted in a sample size of 2008 potential cases. We then excluded patients who had had enrollment in an HMO or incomplete Medicare part B coverage in the year prior to their diagnosis as these patients would not have had complete Medicare claims submitted for the medical services they received. After invoking these criteria, 1541 breast cancer patients remained in our study population. The patient-based file contains information on these 1541 cases.

Many of the variables in the patient file come from the SEER database, whose data elements form the basis for this file. A file of all Medicare claims in 1993, 1994, and 1995 for the 1541 patients was created, and is being used to define many of the other variables. Many of the same routines used for the physician file are being used for the

patient-based file to create similar variables: consultation with an oncologist or radiation oncologist in the two months prior to diagnosis, and distance to the nearest radiation therapy center. The Medicare claims in the ten months prior to the two months prior to the breast cancer diagnosis have been used to define comorbidity using the Johns Hopkins ambulatory care group (ACG) case-mix classification system.

Work in the Coming Year

The database creation has been much more time consuming than originally anticipated. We hope to complete the patient-based file by the end of March 2000. Once the databases are complete, we will examine the unadjusted and adjusted BCT rates for surgeons with different characteristics, as well as for patients living at different distances from radiation therapy. We will also determine whether patients who consulted with radiation oncologists or oncologists prior to their surgery were more likely to receive BCT than those who did not.

FIGURE 1 — Physician Model: Factors Associated with BCT Rates

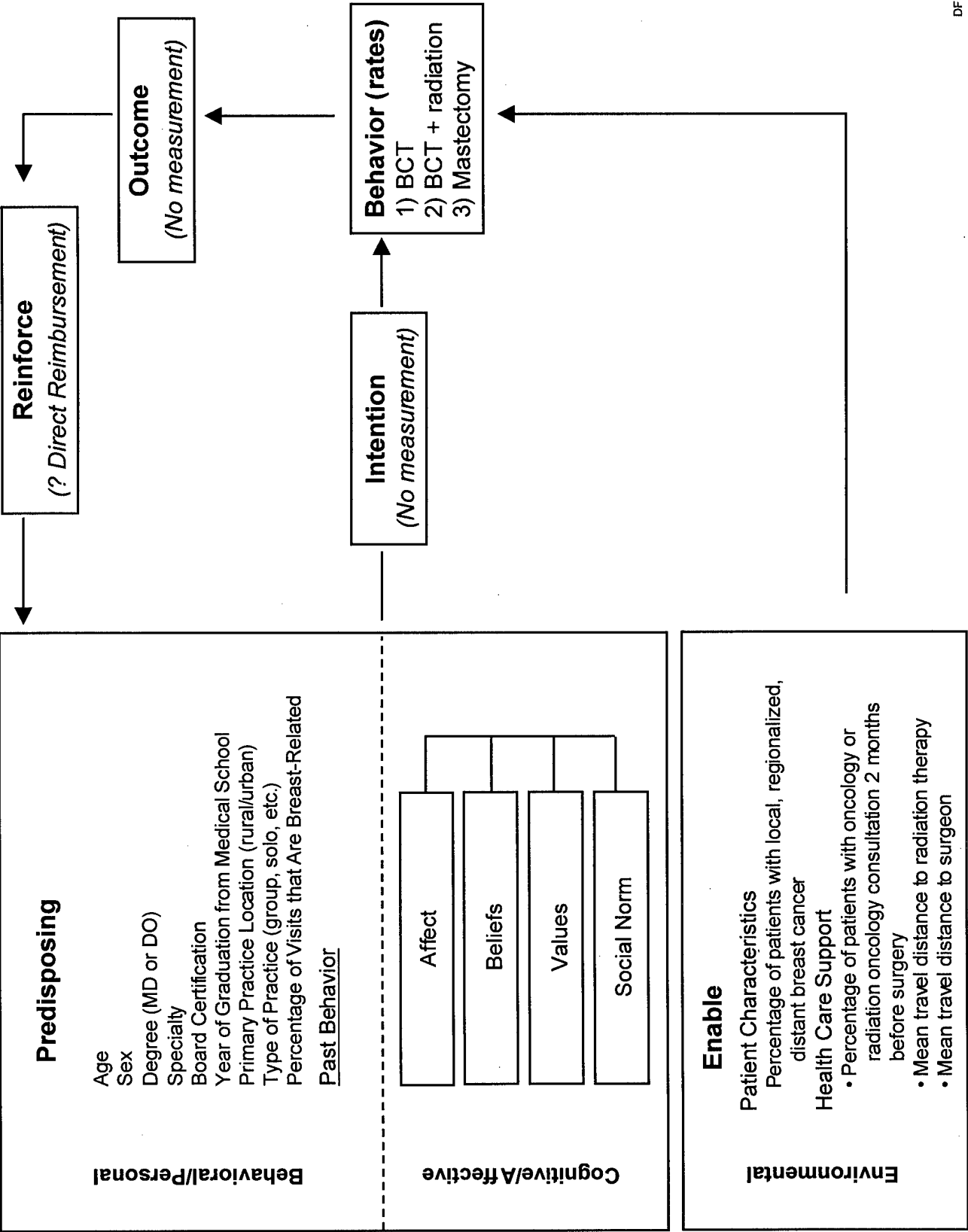


FIGURE 2 — Patient Model: Factors Associated with Choice of Treatment

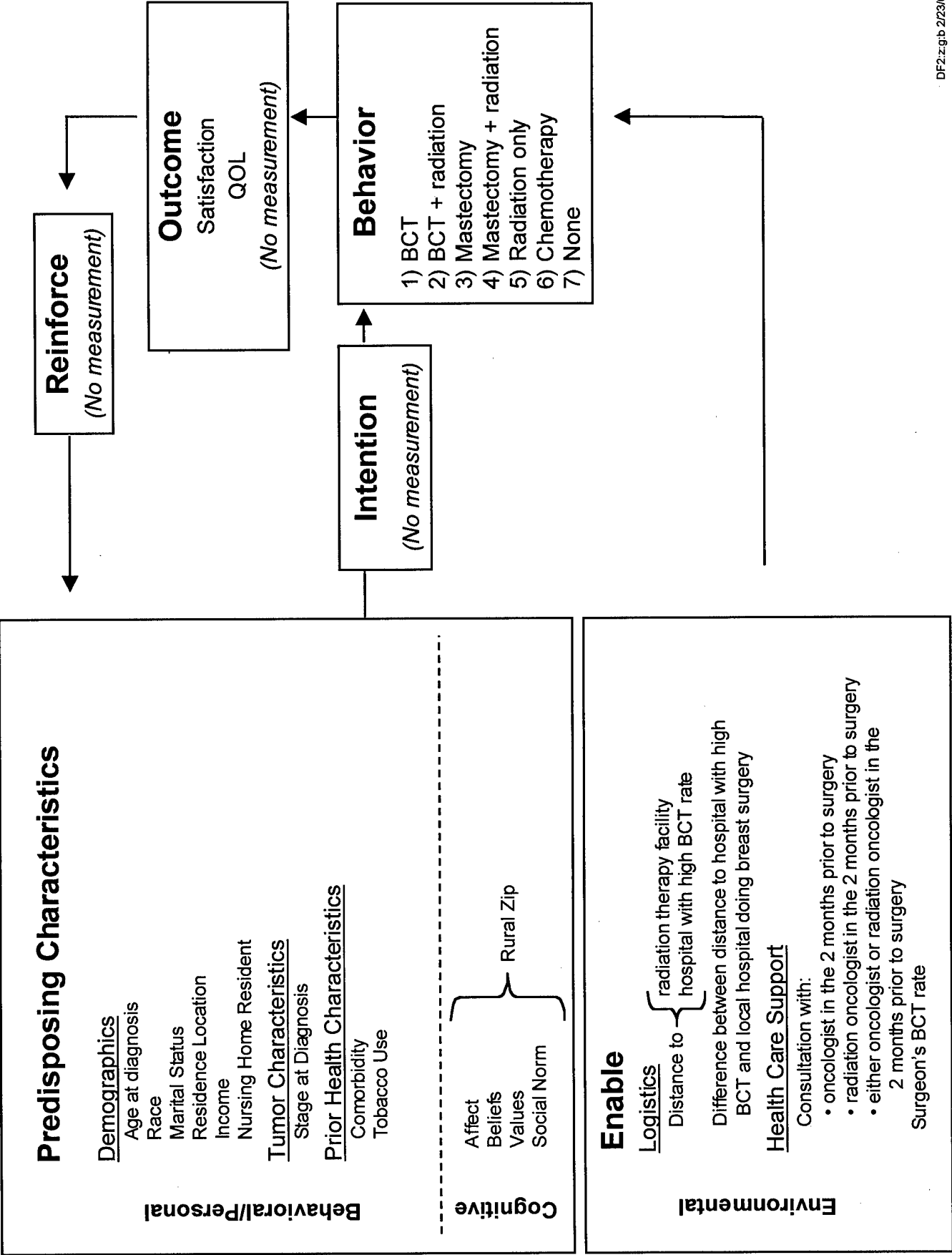
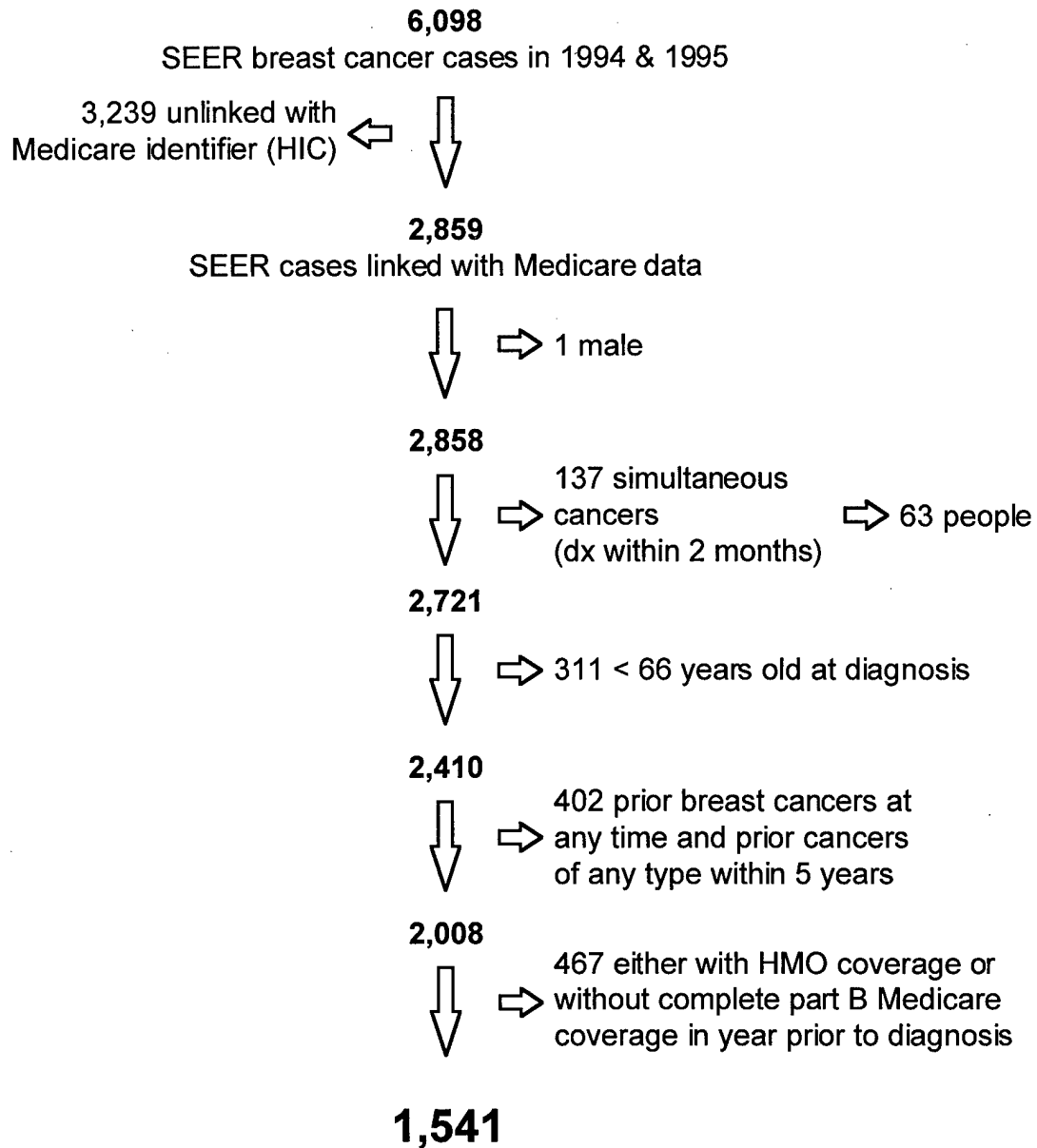


FIGURE 3 — Study Population



Conclusions

We have successfully created a very comprehensive database linking Medicare claims, SEER Program, ABMS, and AMA Masterfile data to identify factors associated with underuse of BCT in early stage breast cancer for elderly women. In the coming year, we look forward to testing our study hypotheses. Based on our study findings, we plan to propose interventions for assuring the availability of BCT to all women with early stage breast cancer.

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